

LEGEND

CENOZOIC

PLEISTOCENE TO RECENT

32 QUS\* 64 Sand, gravel, clay, boulder till, organic deposits.

PALEOZOIC

ORDOVICIAN - SILURIAN

31 OSCP 19 Limestone, dolostone, shale, sandstone, conglomerate.

CAMBRIAN

30 CAC 10 Carbonatite, nepheline and alkalic syenites, associated mafic and ultramafic rocks, fenite.

PRECAMBRIAN

LATE PRECAMBRIAN

29 LPAD 04 Mafic intrusive rocks; diabase, quartz diabase, olivine diabase, gabbro, pyroxenite, serpentized peridotite, olivine gabbro stocks.

28 LPAC 04 Carbonatite, nepheline and alkalic syenites and associated mafic and ultramafic rocks, fenite.

GREENVILLE PROVINCE

27 LPGB 04 Metamorphosed mafic and ultramafic intrusive rocks.

26 LPGA 04 Gneissic alkalic and nepheline syenite.

25 LPGF 04 Quartz monzonite, minor granodiorite and derived metapelites.

24 LPGX 04 Anorthositic intrusive rocks; anorthositic, gabbroic anorthositic, tonalite, diorite, monzonite, sodic, alkalic and quartz syenites, derived gneisses.

MIDDLE AND LATE PRECAMBRIAN

23 MPBN 04 Mafic and ultramafic intrusive rocks; gneissic gabbro, diorite, amphibolite, peridotite, pyroxenite, minor trondhjemite, possible Nipissing Diabase equivalents.

MIDDLE PRECAMBRIAN

22 MPGF 04 Felsic intrusive rocks and gneissic equivalents; quartz monzonite, granodiorite, granite, trondhjemite, albite granite, syenite and minor gabbro.

21 MPS 04 Metasediments; biotite gneiss, muscovite and quartzose gneiss, calc-silicite gneiss, quartzite, gabbroic gneiss, gneissic coarse clastic metasediments, meta-conglomerates.

SUPERIOR AND SOUTHERN PROVINCES

SUDBURY NICKEL ERUPTIVE

20 MSPG 04 Granophyre

19 MSPN 04 Norite-gabbro, quartz norite, quartz gabbro, and transition sub-layer and offset rocks.

WHITEWATER GROUP

18 MPWG 04 CHELMSFORD FORMATION: greywacke, siltstone. ONAWIN FORMATION: carbonaceous shale. ONAPING FORMATION: micaceous and aluminous quartz, and quartz-feldspar sandstone, minor conglomerate and siltstone. GOWANNA FORMATION: conglomerate, sandstone, siltstone and argillite.

NIPISSING DIABASE

17 MPND 04 Pyroxene and hornblende gabbro, amphibolite, granophyre.

HURONIAN SUPERGROUP

COBALT GROUP

16 MPC 04 BAR RIVER FORMATION: quartz sandstone, hematitic siltstone, sandstone. GORDON LAKE FORMATION: siltstone, argillite. LORRAIN FORMATION: micaceous and aluminous quartz, and quartz-feldspar sandstone, minor conglomerate and siltstone. GOWANNA FORMATION: conglomerate, sandstone, siltstone and argillite.

QUIKRE LAKE GROUP

15 MPQL 04 SERPENT FORMATION: quartz-feldspar sandstone with minor siltstone and conglomerate. ESPANOLA FORMATION: limestone, dolostone, siltstone, sandstone. BRUCE FORMATION: conglomerate with minor sandstone and siltstone.

HOUGH LAKE GROUP

14 MPH 04 MISSISSAGI FORMATION: quartz-feldspar sandstone, minor siltstone, argillite and conglomerate. PEDORS FORMATION: siltstone, argillite, greywacke. BOWEN LAKE FORMATION: conglomerate, minor sandstone and siltstone.

ELLIOT LAKE GROUP

13 MP 04 MCKIN FORMATION: siltstone, greywacke, argillite. MATINENDA FORMATION: quartz-feldspar sandstone with minor conglomerate and siltstone.

12 MPVB 04 SALWAY LAKE AND ELSIE MOUNTAIN FORMATIONS: dominantly mafic metavolcanics with minor felsic volcanics, intercalated metasediments. COPPER CLIFF FORMATION: dominantly felsic and intermediate metavolcanics, minor intrusions and intercalated metasediments. STOBIE FORMATION: mafic metavolcanics with abundant intercalated metasediments.

11 MPB 04 Mafic intrusive rocks; gabbro, anorthositic and porphyritic metagabbro.

EARLY PRECAMBRIAN (ARCHEAN)

10 AGM 02 Massive felsic to intermediate plutonic rocks; granite, granodiorite, tonalite, quartz monzonite, monzo-diorite, monzonite.

9 AGN 02 Foliated to gneissic felsic to intermediate plutonic rocks; granite, granodiorite, tonalite, quartz monzonite, diorite, migmatite.

8 AGY 02 Syenite, monzonite, feldspar porphyry.

7 AUB 02 Mafic and ultramafic intrusive rocks, including gabbro, diorite, and serpentized ultramafics.

6 ASCP 02 Metasediments; greywacke, arkose, quartzite, conglomerate, argillaceous and migmatized metasediments, biotite-quartz-feldspar schist and gneiss.

5 AMVA 02 Alkalic metavolcanics; trachyte, leucitic trachyte, flows, tuffs, breccia.

4 AMU 02 Ultramafic metavolcanics; serpentized dunitic and peridotitic flows.

3 AMV 02 Felsic to intermediate metavolcanics; rhyolite to dacite flows and fragmentals, tuff, lapilli-tuff, agglomerate, breccia, porphyritic flows, and pillows lavas, mafic pyroclastics, layered amphibolite, diorite, gabbro, migmatized mafic metavolcanics.

2 AMW 02 Mafic to intermediate metavolcanics; basalt to andesite flows, porphyritic flows, and pillows lavas, mafic pyroclastics, layered amphibolite, diorite, gabbro, migmatized mafic metavolcanics.

1 IF 02 Iron formation.

\*A mnemonic code assigned to rock types and recorded as part of field observations.

Geological boundary; approximate, assumed

Fault

No analytical results

Field duplicate site

Geology base and legend for these geochemical maps were derived from:

Ayres, L.D., Lumbers, S.B., Milne, V.G., Robeson, D.W., 1970, Ontario Geological Map Southern Sheet, Map 2197, Ontario Department of Mines and Northern Affairs, 1:103,760.

Card, K.D. and Lumbers, S.B., 1975, Sudbury - Cobalt, Geological Compilation Series, Map 2361, Ontario Geological Survey, 1:253,440.

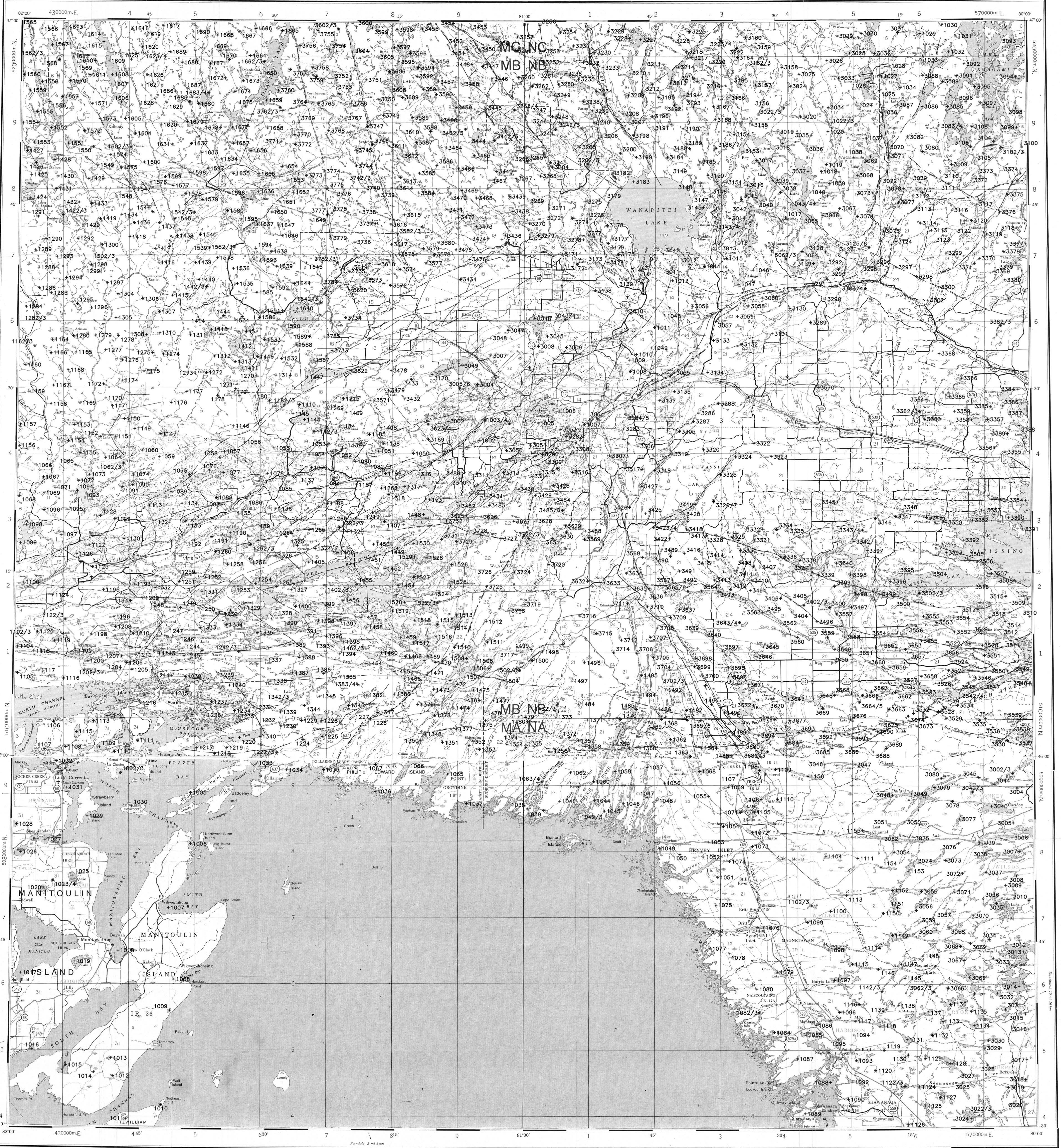
Douglas, R.J.W. (coordinator), Sanford, B.V., and Baer, A.J., 1971, Southern Ontario, Map 1335A, Geological Survey of Canada, 1:1,000,000 Geological Atlas.

McCann, G.F., Kistner, J.D., and Brown, P.A., 1979, Geology - Plutonic Rocks in Ontario, Map 1533A, Geological Survey of Canada, to accompany GSC P 80-23, 1:1,000,000.

Pyke, D.R., Ayres, L.D., and Innes, D.B., 1971, Timmins - Kirkland Lake, Geology Compilation Series, Map 2205, Ontario Geological Survey, 1:253,440.

NOTE: The geology legend is common to both GSC Open Files 1639 and 1640.

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NTS 411, Part of 41H

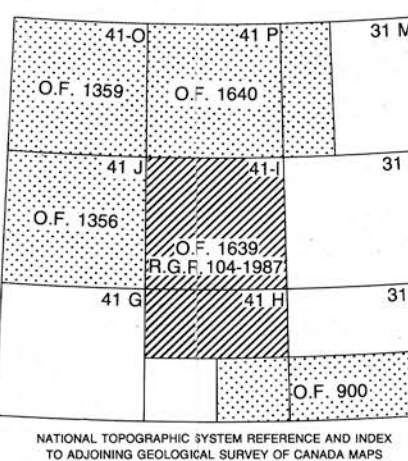
SAMPLE LOCATION  
LAKE SEDIMENTS

GSC OPEN FILE 1639  
REGIONAL GEOCHEMICAL RECONNAISSANCE MAP 105-87  
CANADA - ONTARIO  
MINERAL DEVELOPMENT AGREEMENT (1985-1990)  
LAKE SEDIMENT AND WATER GEOCHEMICAL SURVEY  
CENTRAL ONTARIO, 1987

Elevation in feet above mean sea level

Mean magnetic declination 1988, 9° 26' West, increasing 4.6 annually. Reading vary from 8° 00' in the SW corner to 10° 53' in the NE corner of the map area.

Scale 1:250 000 - Echelle 1/250 000  
Universal Transverse Mercator Projection  
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Surficial deposit mapping not available for NTS 41H

SURFICIAL GEOLOGY

- Organic and peatland deposits.
- Glaciolacustrine and glaciomarine clay and silt; deep water deposits.
- Glaciolacustrine sand and gravel; includes shallow water glaciolacustrine and glaciomarine deposits.
- Till; blanket deposits of unsorted boulders, sand, silt and clay-sized particles.
- Till; veneer of glacial sediments over bedrock.
- Bedrock; minor patches of thin glacial sediment cover.

SYMBOLS

- Moraines; end, recessional and interlobate
- Linear ice flow features; drumlins, drumlinoid forms, crag and tail forms
- Esker

Source of Information:

Sado, E.V., and Carswell, B.F. (compilers), 1987, Surficial Geology of Northern Ontario, 065 Map 2518, Ministry of Northern Development and Mines, Mines and Minerals Division, 1:1,200,000.

NOTE: This legend is common to Open Files 1639 and 1640.

Geological Survey of Canada  
Mineral Resources Division  
Exploration Geochemistry Subdivision

CONTRACTORS

Lake sediment sample collection by SIAL Geophysics Inc., Montreal  
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Sediment chemical analyses by Bondar-Clegg and Company Ltd., Ottawa  
Water and Au chemical analysis by Chemex Labs Limited, Vancouver  
Geological base prepared by Terra Surveys Ltd., Ottawa  
from published material supplied by Geological Survey of Canada

Copies of the Open File map material, element trend and symbol plots, listing of field observations, analytical data, descriptions of analytical methods, and digital data on IBM-PC compatible diskette are available by inquiring to:

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